



**NGH**



# SCOPING REPORT

## Burrawong Wind Farm

November 2021

Project Number: 20-468



## **6. Preliminary environmental assessment**

### **6.1 Methodology**

A preliminary environmental risk assessment has been completed to assist in the identification of key environmental matters that would require detailed assessment within the EIS.

The assessment is based on the Proponent's experience in wind farm development, a desktop review and preliminary site inspection (involving limited flora and fauna surveys and photography to inform landscape character assessment) to identify potential high-level constraints and major risks to the Proposal. This will be used to guide further detailed investigations and ultimately to define the development corridor, within which the site infrastructure will be sited.

The following was included in the preliminary environmental risk analysis:

1. Investigation of the planning pathway and relevant legislation that may impact the project.
2. Desktop review, including database searches relating to:
  - Threatened flora and fauna species and ecological communities
  - EPBC Act Protected Matters Reporting Tool
  - Aboriginal heritage
  - Land use / nearby receivers
  - Key fish habitat
  - Historic heritage
  - Soil and landscape capability mapping
  - Soil landscapes
3. Land Category Assessment was prepared by NGH Pty Ltd (NGH) to determine whether Category 1 – Exempt Land is located within the Subject Land. Category 1 – Exempt Land can be excluded from most aspects of the biodiversity assessment, under the BC Act Biodiversity Assessment Method (BAM).
4. Field inspection. A Senior Ecologist and Ecologist inspected the site over two days between 8-9 December 2020. The inspection was undertaken to validate the biodiversity desktop information and obtain information on the level of site disturbance, to inform heritage and other environmental assessments.
5. A specialist landscape and visual impact consultant, Moir Landscape Architecture, was engaged to undertake a Preliminary Landscape and Visual Impact Assessment, including photography to inform landscape character assessment.
6. A Preliminary Noise Impact Assessment.
7. A SIA scoping and initial assessment to gain an initial understanding of the Proposal's social locality, characteristics of the community, likely social impacts and consideration of response to likely social impacts (Appendix D).

From this analysis, some environmental matters were deemed to be key issues on the basis that they had the potential, without suitable mitigation, to have a significant impact on the environment.

A summary of the key environmental issues is provided in Section 6.2. These are expected to require detailed assessment. Of these key environmental issues, areas of high constraint that will be targeted for detailed assessment include:

- Visual Amenity

- Noise Amenity
- Biodiversity
- Aboriginal Heritage.

To guide further investigation and preliminary planning, Section 7 maps these areas of high constraint on a precautionary basis and sets out the way forward for investigating and responding to them further.

Areas of moderate constraint that will be subject to detailed assessment include:

- Traffic Impacts
- Aviation
- Telecommunications
- Social Impacts
- Cumulative Impacts.

The potential impacts and management of other (less substantive) issues are discussed in Section 6.3. These would be subject to standard assessment. These include:

- Soils and contaminated land (soil surveys may be undertaken to inform this component)
- Hydrology and groundwater
- Air quality
- Hazard and risk
- Waste management
- Land use compatibility
- Historic heritage (onsite inspection may be undertaken to inform this component)

## **SSD Scoping Report summary table**

Systematically summarising this categorisation of ‘key’ and ‘other’ issues in accordance with the SSD Scoping Report Guidelines, is the scoping summary table in Appendix E. This table summarises the scale of impact, nature of impact and sensitivity of the receiving environment for the environmental issues detailed in Section 6.2 and Section 6.3. The scoping summary table clarifies the level of assessment required for each matter as the proposal moves into the EIS phase. It also identifies whether a cumulative impact assessment (CIA) is required, the type of engagement required, relevant government plans, policies and guidelines and a cross-reference to where the matter is addressed in the scoping report.

## **6.2 Assessment of key issues**

### **6.2.1 Visual amenity**

#### **Introduction**

Moir Landscape Architecture was commissioned by Windlab to undertake a Preliminary Landscape and Visual Impact Assessment (PVIA) for the Proposal. The PVIA has been prepared in accordance with the NSW Wind Energy: Visual Assessment Bulletin (DPE) 2016. The PVIA is provided in Appendix B with a summary below.

## **Methodology**

Consistent with the Visual Assessment Bulletin, the Study Area for the PVIA is generally defined as the land up to 8,000m from the nearest turbine. However, in response to the feedback received at the Scoping Meeting held with DPIE on 8 June 2021, the Study Area has been extended beyond this to include the townships of Balranald and Kyalite.

### **Desktop Assessment**

A desktop assessment was undertaken using the preliminary turbine layout presented in Figure 2-7. To assess the worst-case scenario with highest visual impact, a tip height of 300m was used. The desktop assessment includes:

- Application of Preliminary Assessment Tools to determine receptors with potential sensitivity.
- Preparation of a preliminary Zone of Visual Influence (ZVI) to establish a theoretical zone of visibility of the Proposal.
- Identification of key viewpoints and landscape features using available mapping and background documents.

### **Site inspection**

Photographic survey work for the assessment was undertaken in January 2021 to carry out a preliminary assessment of the existing landscape character from publicly accessible land within the Study Area. The findings of the site inspection have been included in the PVIA and will form the basis for discussion with the community in the EIS phase.

### **Community consultation**

Community consultation has been undertaken through the scoping phase. Targeted consultation to identify community and landscape values included face-to-face meetings with nearby neighbours, drop-in sessions at Balranald and Kyalite, and a values survey which was available online and as a hardcopy (see Section 4). Results of the community consultation documented in previous studies have also been utilised to gain perspective on the landscape values held by the community to inform the PVIA. Community consultation will continue through the EIS phase.

The PVIA assessment also includes recommendations for further assessment to be undertaken as part of the EIS phase.

## **Preliminary assessment**

### **Preliminary assessment tools**

The purpose of the Preliminary Assessment Tools in the PVIA is to identify sensitive receptors for further assessment and justification in the EIS phase. Further assessment may identify factors such as visual screening from existing vegetation and topography, which may minimise the impacts. For a tip height of 300m, the visual magnitude thresholds based on the Visual Assessment Bulletin are 4000m (black line in Figure 6-1) and 5900m (blue line in Figure 6-1).

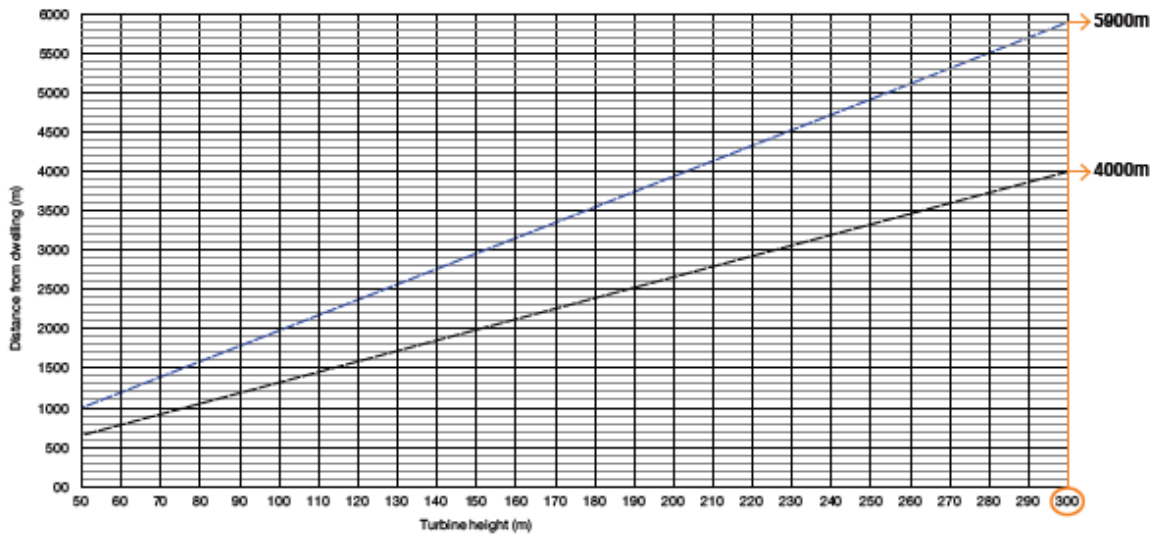


Figure 6-1 Visual magnitude thresholds for visual assessment (from NSW Wind Energy: Visual Assessment Bulletin 2016)

The Visual Magnitude Tool identified a total of three (3) non-involved dwellings within the black line of visual magnitude (4,000m) and one (1) non-involved dwelling within the blue line of visual magnitude (4,000-5,900m), which are shown in Figure 6-2. See Appendix B for the full preliminary visual magnitude assessment.

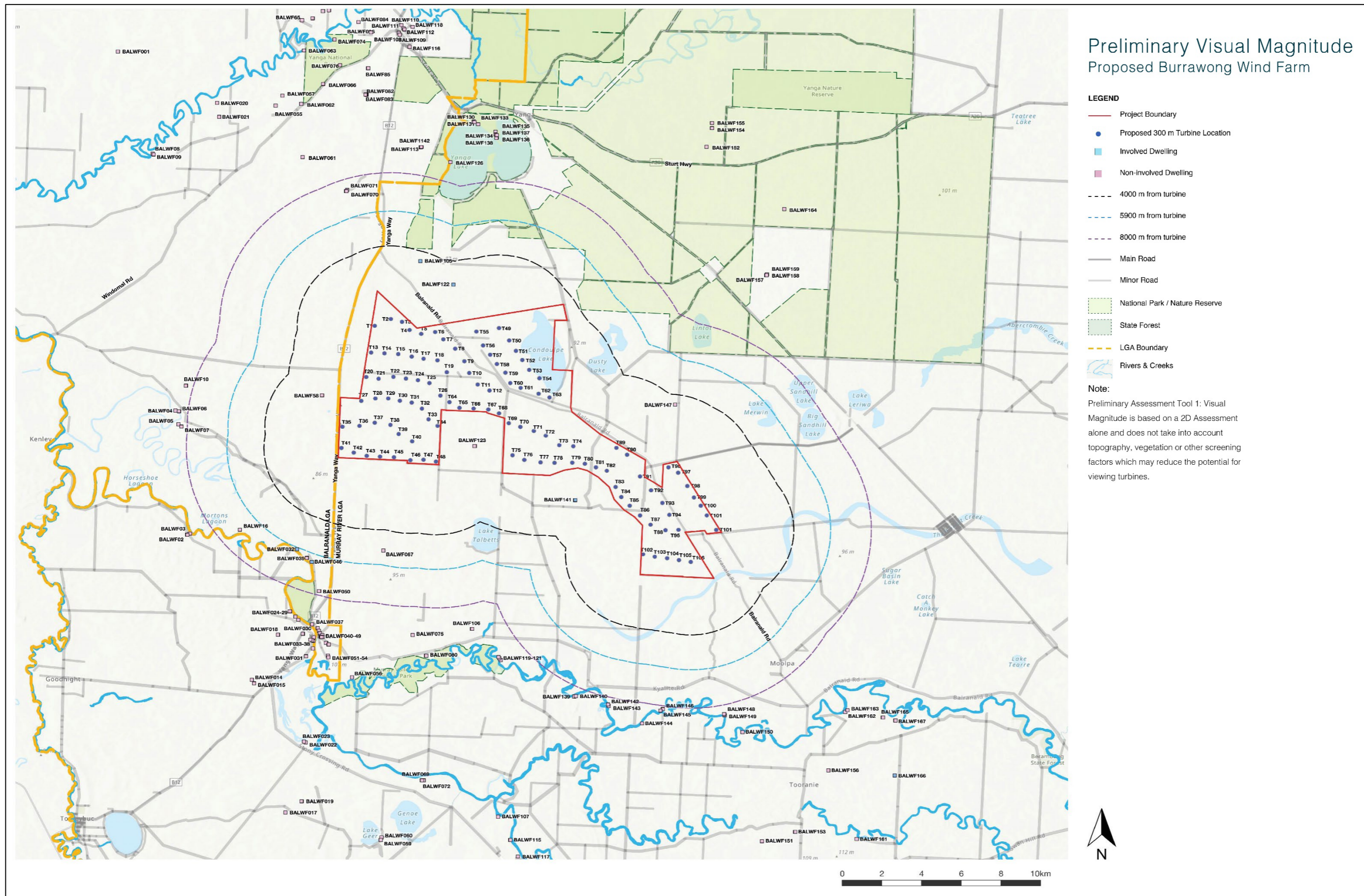


Figure 6-2 Preliminary visual magnitude assessment

The Multiple Wind Turbine Tool (MWTT) was applied to all dwellings within 8000m of the nearest proposed turbine (as seen in Figure 6-3). The MWTT identified three (3) dwellings with turbines in more than two (2) 60 degree sectors. See Appendix C for the full multiple wind turbine tool assessment. Table 6-1 provides an overview of the results from the preliminary assessment tools.

Table 6-1 Overview of Preliminary Assessment for residences within 5900 metres

<b>Non-involved residences within 4000 metres of nearest WTG (Black Line of Visual Magnitude)</b>					
<b>Dwelling ID:</b>	<b>Location</b>	<b>Approximate distance to nearest WTG (kms)</b>	<b>Nearest WTG</b>	<b>Number of 60° sectors (Based on 2D Assessment)</b>	<b>Approx. number of potentially visible WTGs (Based on ZVI)</b>
Non-involved:					
<b>BALWF058</b>	<b>Mallee Highway</b>	<b>2.218km</b>	<b>T35</b>	<b>3</b>	<b>107</b>
<i>Views likely to be available of all proposed turbines to the east. Scattered vegetation is expected to fragment views.</i>					
<b>BALWF123</b>	<b>Arundel Road</b>	<b>1.990km</b>	<b>T75</b>	<b>4</b>	<b>107</b>
<i>Views likely to be available of all proposed turbines to the west, north and east. Wind break planting surrounding the dwelling vegetation is expected to screen views.</i>					
<b>BALWF147</b>	<b>Big Sandhill Road</b>	<b>3.360km</b>	<b>T96</b>	<b>3</b>	<b>107</b>
<i>Views likely to be available of all proposed turbines to the south-west. Scattered vegetation is likely to fragment views.</i>					
<b>Non-involved residences within 4000 - 5900 metres of nearest WTG (Blue Line of Visual Magnitude)</b>					
<b>Dwelling ID:</b>	<b>Location</b>	<b>Approximate distance to nearest WTG (kms)</b>	<b>Nearest WTG</b>	<b>Number of 60° sectors (Based on 2D Assessment)</b>	<b>Approx. number of potentially visible WTGs (Based on ZVI)</b>
Non-involved					
<b>BALWF067</b>	<b>Off Yanga Way</b>	<b>5.065km</b>	<b>T46</b>	<b>1</b>	<b>107</b>
<i>Views likely to be available of all proposed turbines to the north-east. Scattered vegetation is likely to fragment views.</i>					

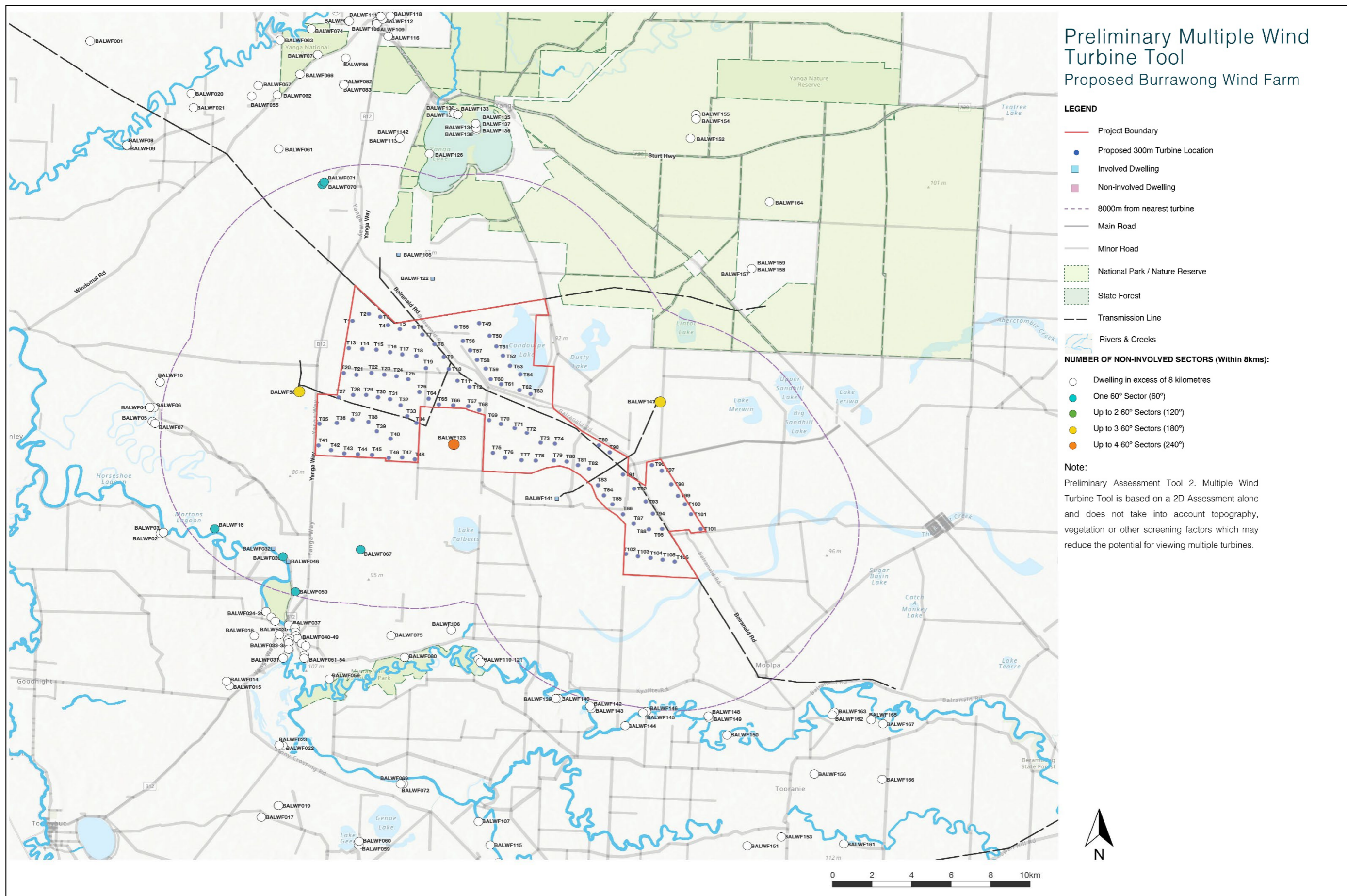


Figure 6-3 Multiple wind turbine assessment



## **Viewpoint analysis**

In response to the feedback received at the Scoping Meeting held with DPIE on 8 June 2021, the preliminary viewpoint analysis in the PVIA was extended to include the two townships of Balranald and Kyalite. Balranald is approximately 15km from the Proposal and the viewpoint assessment finds that it is likely that a combination of distance and vegetation in the foreground will screen views to the Proposal. Kyalite is approximately 10km from the Proposal and the viewpoint analysis finds that views to the turbines will be difficult to discern from this location due to a combination of distance and vegetation. See Appendix C for the full viewpoint analysis.

The townships of Balranald and Kyalite have also been identified as Landscape Character Units (LCU) in the PVIA and a detailed assessment of key public viewpoints with potential visual impacts will be undertaken in the LVIA phase.

## **Proposed further assessment**

Details on how the Proponent will respond to the PVIA are provided in Section 7. Further assessment and justification for placement of turbines will be detailed in the EIS, along with a summary of mitigation and management options proposed for individual receivers.

The scope of the Landscape and Visual Impact Assessment (LVIA) for the EIS will include a detailed dwelling assessment at sensitive non-involved dwellings to:

- Assess each 'sensitive receptor' in detail to take into account topography, vegetation and other screening factors.
- Determine the potential visual impact of each sensitive receptor and provide mitigation methods to reduce potential visual impacts.

The LVIA will also include a detailed Visual Baseline Study to:

- Identify any additional key features and viewpoints valued by the community through ongoing consultation.
- Refine the Landscape Character Units and allow the community to provide feedback on the relative scenic quality ratings of these.
- Determine the Zone of Visual Influence of key viewpoints and assess these against the objectives outlined in the Visual Assessment Bulletin.
- Provide graphic representations of the Proposal using GIS technology including wire frame diagrams and photomontages.

## **6.2.2 Noise amenity**

### **Introduction**

Windlab has undertaken a Preliminary Noise Impact Assessment (PNIA) for the Proposal. The PNIA has been prepared in accordance with the NSW Wind Energy: Noise Assessment Bulletin (EPA/DPE) 2016.

The Proposal will comply with strict construction and operational noise limits. Figure 6-4, extracted from the Noise Assessment Bulletin, compares various noise standards from other national and international jurisdictions and demonstrates that NSW has adopted high standards when compared to these other jurisdictions.



Figure 6-4 Representative distances at which various noise standards can be achieved

## Methodology

Windlab has conducted a preliminary assessment on operational noise using specialised modelling software (OpenWind) to provide indicative noise predictions. The assessment was conducted in accordance with the Noise Assessment Bulletin and utilised the preliminary layout presented in Figure 2-7. Three wind turbine models representative of the size and type of turbine being considered for the Proposal have been modelled using the maximum sound power level and conservative assumptions to produce the worst-case noise scenario. Indicative noise predictions corresponded to hub height wind speeds of 9m/s and above when the turbine models are producing the highest level of noise. Indicative noise predictions generated in the modelling were compared to the base criteria adopted by the Noise Assessment Bulletin of 35 dBA for non-involved residences.

## Preliminary assessment

Based on the preliminary modelling, the baseline criterion of 35 dB(A) is predicted to be achieved at all non-involved dwellings with the exception of one dwelling. However, another dwelling is within 1 dBA of the limit (34.8 dBA). To allow for modelling errors and ensure that impacts are fully understood and considered, this dwelling has been classified as a sensitive receptor requiring further assessment and justification. The results of the preliminary assessment modelling are shown graphically in Figure 6-5 and listed in Table 6-2. There are no non-involved residences within 2km of a proposed turbine position. Dwellings further than 6km are not shown.

Table 6-2 Results of the noise model

House ID	Distance to nearest turbine (km)	Predicted noise (dB(A))	Exceedance above 35 dBA
BALWF58	2.3	34.8	Yes
BALWF67	5.1	23.8	No
BALWF123	2.0	38.6	Yes
BALWF147	3.4	28.7	No

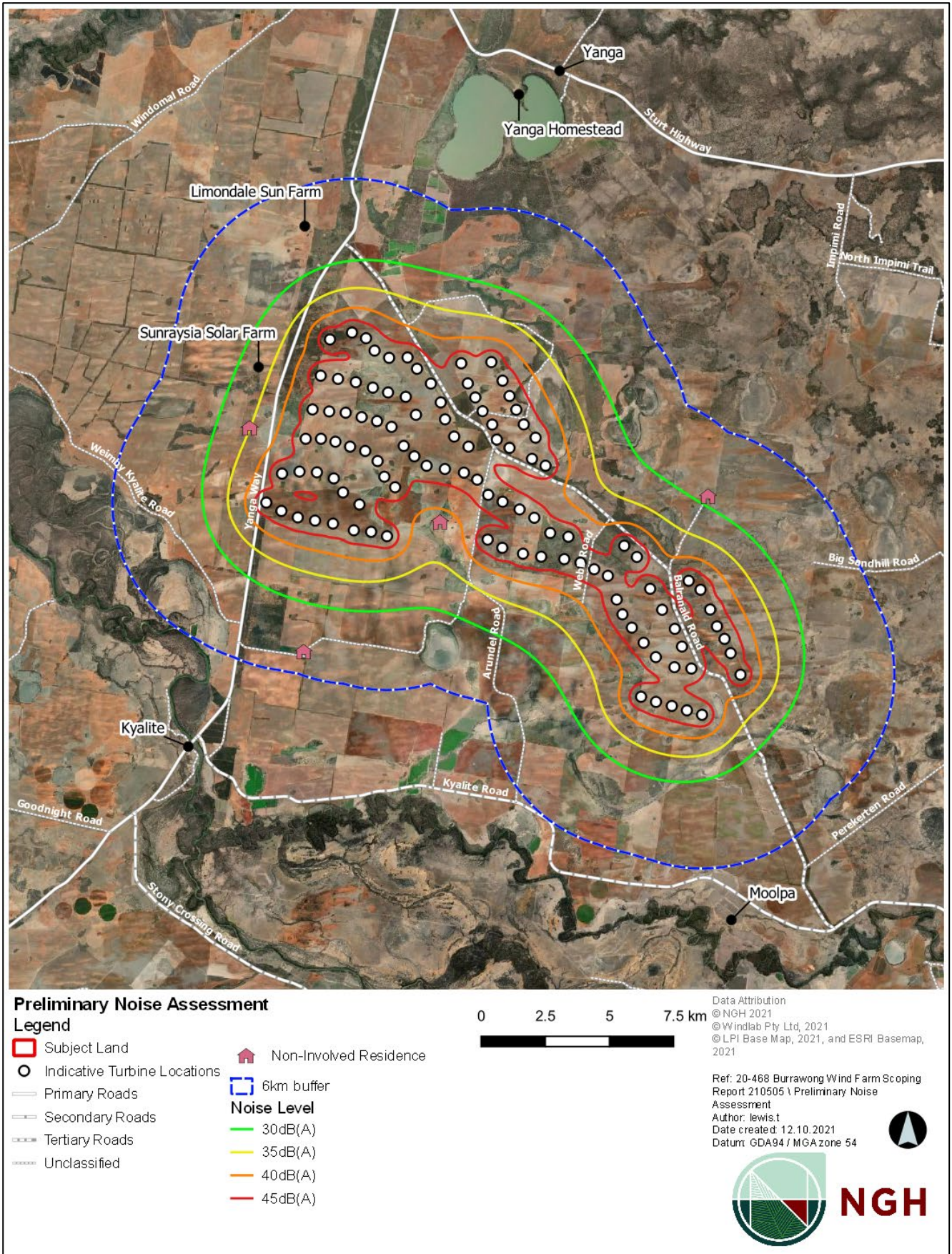


Figure 6-5 Preliminary noise assessment with non-involved residences shown

## **Proposed further assessment**

Details on how the Proponent will respond to the PNIA are provided in Section 7. Further assessment and justification for placement of turbines will be detailed in the EIS, along with a summary of mitigation and management options proposed for individual receivers.

The scope of the Noise Impact Assessment (NIA) for the EIS will include:

- A relevant level of background noise survey
- Review of site meteorology data to determine relevant meteorological data to be used in modelling
- Predictive noise modelling of the Proposal's construction and operational activities
- Road traffic noise during construction and operational activities
- Vibration impacts at sensitive receptors
- Blasting impacts at sensitive receptors
- Cumulative noise impacts with surrounding industry (if any)
- Identification of any reasonable and feasible mitigation and management measures.

The NIA will also assess all components of the Proposal including:

- Wind turbine noise in accordance with the Noise Bulletin (DPE, 2016c)
- Ancillary infrastructure in accordance with the 'NSW Noise Policy for Industry' (EPA, 2017)
- Construction noise under the 'Interim Construction Noise Guideline;' (DECC, 2009)
- Traffic noise under the 'NSW Road Noise Policy' (DECCW, 2011)
- Vibration 'Assessment Vibration: A technical Guideline' (DECC, 2006).

### **6.2.3 Biodiversity**

NGH was commissioned to undertake a preliminary biodiversity assessment for the Proposal, and the assessment is summarised below.

#### **Methodology**

This assessment was informed by desktop investigation and limited onsite ground truthing. A Senior Ecologist and Ecologist inspected the site over two days between 8-9 December 2020. The inspection was undertaken to validate the biodiversity desktop information and obtain information on the level of site disturbance. This information will be used to target more detailed targeted site surveys.

Site evaluation utilised 175 rapid assessments to determine key vegetation types and potential for vegetation and habitat of conservation significance. Rapid assessment was focussed in areas of the draft Development Site. Key features surveyed on site include:

- Key vegetation types
- Plant Community Types (PCTs) determination
- Rapid assessment was also utilised to determine the likelihood of threatened ecological community occurrence
- Potential for threatened vegetation communities or habitat to support threatened species e.g. Hollow-bearing trees
- Presence of threatened flora and fauna

- Habitat of conservation significance e.g. Waterbodies, isolated paddock trees, fallen timber
- Defining non-native vegetation areas which were used for cropping or grazing.

### Plant Community Types (PCTs)

Existing State Vegetation Mapping (VIS\_ID\_4469) and rapid assessment on site from the 8-9 December 2020 by senior Biodiversity Assessment Method (BAM) accredited NGH ecologist Kirsten Vine (BAAS19031) and NGH Ecologist Clare Vincent, was utilised to determine presence/absence of Plant Community Types (PCTs) and Threatened Ecological Communities (TECs) within the Subject Land. Overall, ten (10) PCTs were determined to occur on site and can be seen in Table 6-3.

PCTs will need to be confirmed in a detailed Biodiversity Assessment Report (BDAR) as required under the *Biodiversity Conservation Act 2016* (BC Act).

The dominant PCTs were determined to be:

- PCT 13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 57 - Belah/Black Oak - Western Rosewood - Wilga woodland of central NSW including the Cobar Peneplain Bioregion
- Other PCTs were predominantly grassland and shrubland communities, occurring in small discreet areas which can form moderate to high habitat potential for threatened species.

### Threatened Ecological Communities (TECs)

The Office of Environment and Heritage (OEH) threatened species search and detailed mapping of the surrounding areas (VIS\_ID\_4469) and preliminary field assessment identified ten PCTs occurring on the site with seven being associated with Threatened Ecological Communities (TECs) under the BC Act (Table 6-3). No PCTs qualify for a TEC under the EPBC Act. PCT mapping is provided in Figure 6-6.

Further comprehensive BAM plots are required to confirm that all the PCTs do or do not fully meet the criteria for all the TECs.

PCT 23 is the only PCT which is a TEC, and therefore poses a high constraint. The TEC is *Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions* TEC. This is a small 0.75 ha area of vegetation within the Subject Land.

Table 6-3 PCTs in Development Site

PCT	PCT Name	Vegetation Class	Vegetation Formation	Approx. Area (ha)	Threatened Ecological Community
0	Not native	NA	NA	11592.58	NA
13	Black Box - Lignum woodland wetland of the inner floodplains in the	Inland Floodplain Woodlands	Semi-arid Woodlands (Grassy)	4.88	No associated TEC

PCT	PCT Name	Vegetation Class	Vegetation Formation	Approx. Area (ha)	Threatened Ecological Community
	semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)				
15	Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Inland Floodplain Woodlands	Semi-arid Woodlands (Grassy)	944.06	No associated TEC
23	Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Riverine Sandhill Woodlands	Semi-arid Woodlands (Shrubby)	0.75	<b>Listed BC Act, E:</b> <i>Acacia melvillei</i> Shrubland in the Riverina and Murray-Darling Depression bioregions (Equivalent). <b>This PCT does meet the criteria for this TEC, but in a very degraded condition</b>
44	Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	Riverine Plain Grasslands	Grasslands	15	<b>Listed EPBC Act, CE:</b> <i>Natural Grasslands of the Murray Valley Plains (Part)</i> This PCT occurs in a derived form in NSW and may be eligible for this TEC listing. Each grassland patch will need individual assessment if impacted on.
46	Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	Riverine Plain Grasslands	Grasslands	803.65	<b>Listed EPBC Act, CE:</b> <i>Natural Grasslands of the Murray Valley Plains (Part)</i> This PCT occurs in a derived form in NSW and may be eligible for this TEC listing. Each grassland patch will need individual assessment if impacted on.
57	Belah/Black Oak - Western Rosewood - Wilga woodland of central NSW including the Cobar Penepplain Bioregion	Semi-arid Woodlands (Shrubby)	Semi-arid Sand Plain Woodlands	236.5	<b>Listed BC Act, E:</b> <i>Acacia loderi</i> shrublands <b>This PCT does not meet the criteria for this TEC as <i>Acacia loderi</i> does not occur as the dominant or semi-dominant species.</b>

PCT	PCT Name	Vegetation Class	Vegetation Formation	Approx. Area (ha)	Threatened Ecological Community
163	Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Riverine Chenopod Shrublands	Arid Shrublands (Chenopod sub-formation)	225.86	<b>Listed BC Act, E: Artesian Springs Ecological Community in the Great Artesian Basin</b> <b>This PCT does not meet the criteria for this TEC as it is not dependant on springs; not mapped as occurring nearby; nor dominated by sedges or other semi-aquatic plants</b>
170	Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Sand Plain Mallee Woodlands	Semi-arid Woodlands (Shrubby sub-formation)	212.1	<b>Listed BC Act, E: Acacia loderi shrublands (Part);</b> <b>This PCT does not meet the criteria for this TEC as it does not contain <i>Acacia loderi</i> or characteristic species.</b> <b>Listed BC Act, E: Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions (Part);</b> This PCT does not meet the criteria for this TEC as it does not contain <i>Acacia melvillei</i> or characteristic species.
173	Sandplain mallee of central NSW	Sand Plain Mallee Woodlands	Semi-arid Woodlands (Shrubby sub-formation)	141.54	<b>Listed BC Act, E: Acacia loderi shrublands (Part);</b> <b>This PCT does not meet the criteria for this TEC as it does not contain <i>Acacia loderi</i> or characteristic species.</b> <b>Listed BC Act, E: Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions (Part);</b> This PCT does not meet the criteria for this TEC as it does not contain <i>Acacia melvillei</i> or characteristic species.

Table 6-4 Plant community types ground truthed

### Land Category Assessment (LCA)

NGH was engaged by Windlab to prepare a preliminary Land Category Assessment for the proposed Burrawong Wind Farm. Section 6.8(3) of the BC Act determines that the Biodiversity Assessment Method (BAM) is to exclude the assessment of the impacts of clearing of native vegetation on Category 1 - Exempt Land (within the meaning of Part 5A of the *Local Land Services Act 2013* (LLS Act)).

A desktop assessment of available spatial data, literature review of previous studies in the region and field observations were undertaken for the Subject Land to determine the ecological constraints, native vegetation communities and land class categories. A precautionary approach was used when identifying Category 2 – Regulated Land. Where data was conflicting, land was mapped as Category 2.

Based on the data sources used, there is evidence to suggest that large areas of the subject land, have been heavily modified from agricultural use pre-1990. This is supported by the 2017 land use datasets, historic aerial imagery and woody extent spatial data. These areas have been mapped as Category 1 - Exempt Land. These areas are exempt from most aspects of the biodiversity assessment, under the BAM.

Areas of woody vegetation and scattered paddock trees present in 1990 have been mapped as Category 2 – regulated land. Where in doubt, or where data sources are conflicting, a precautionary approach has been implemented for areas deemed inconclusive in terms of determining historical land use.

The full Land Category Assessment report is provided in Appendix C. The draft mapping of Category 1 and Category 2 land is provided in Figure 6-7.



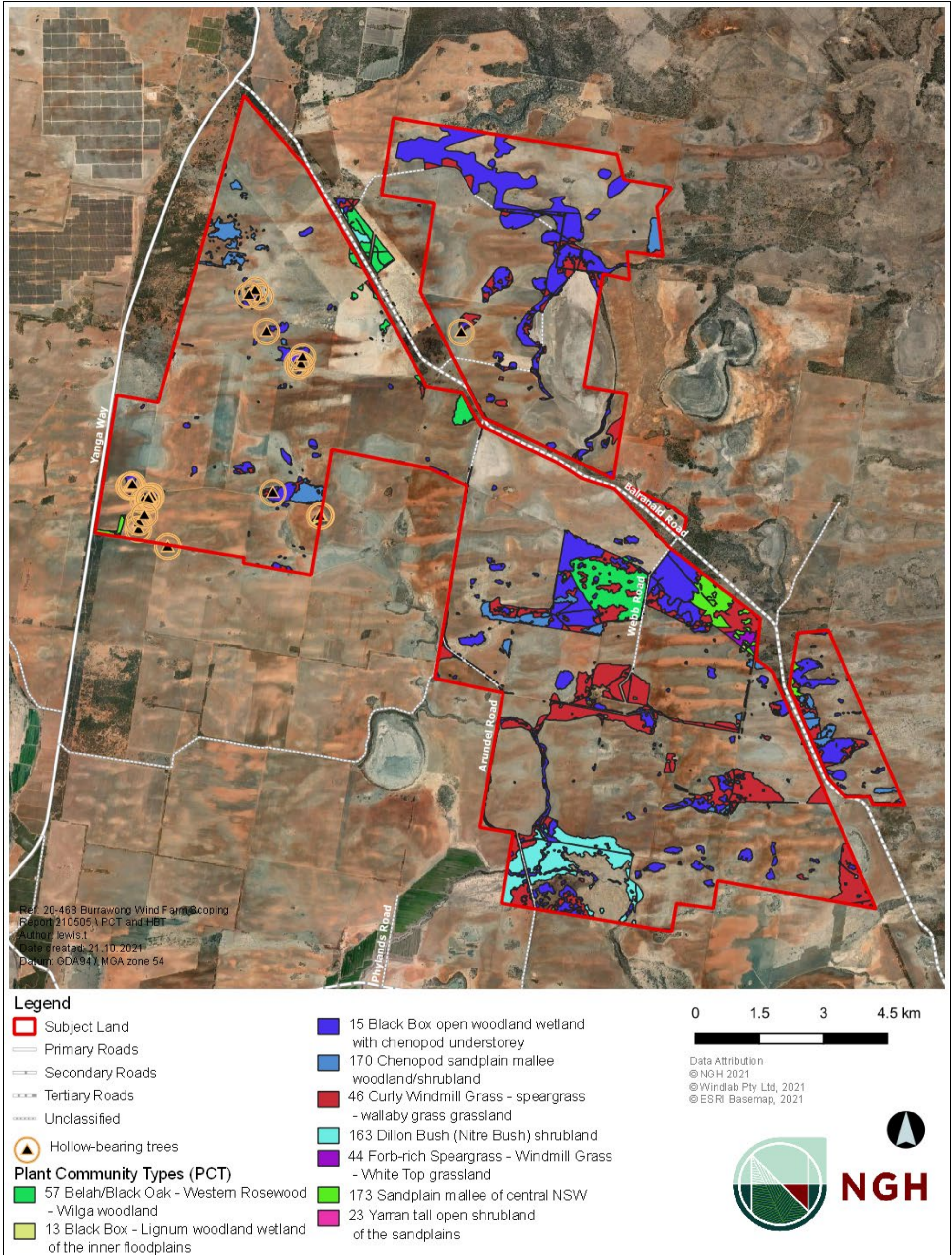


Figure 6-6 Plant community types (PCTs) and hollow-bearing trees

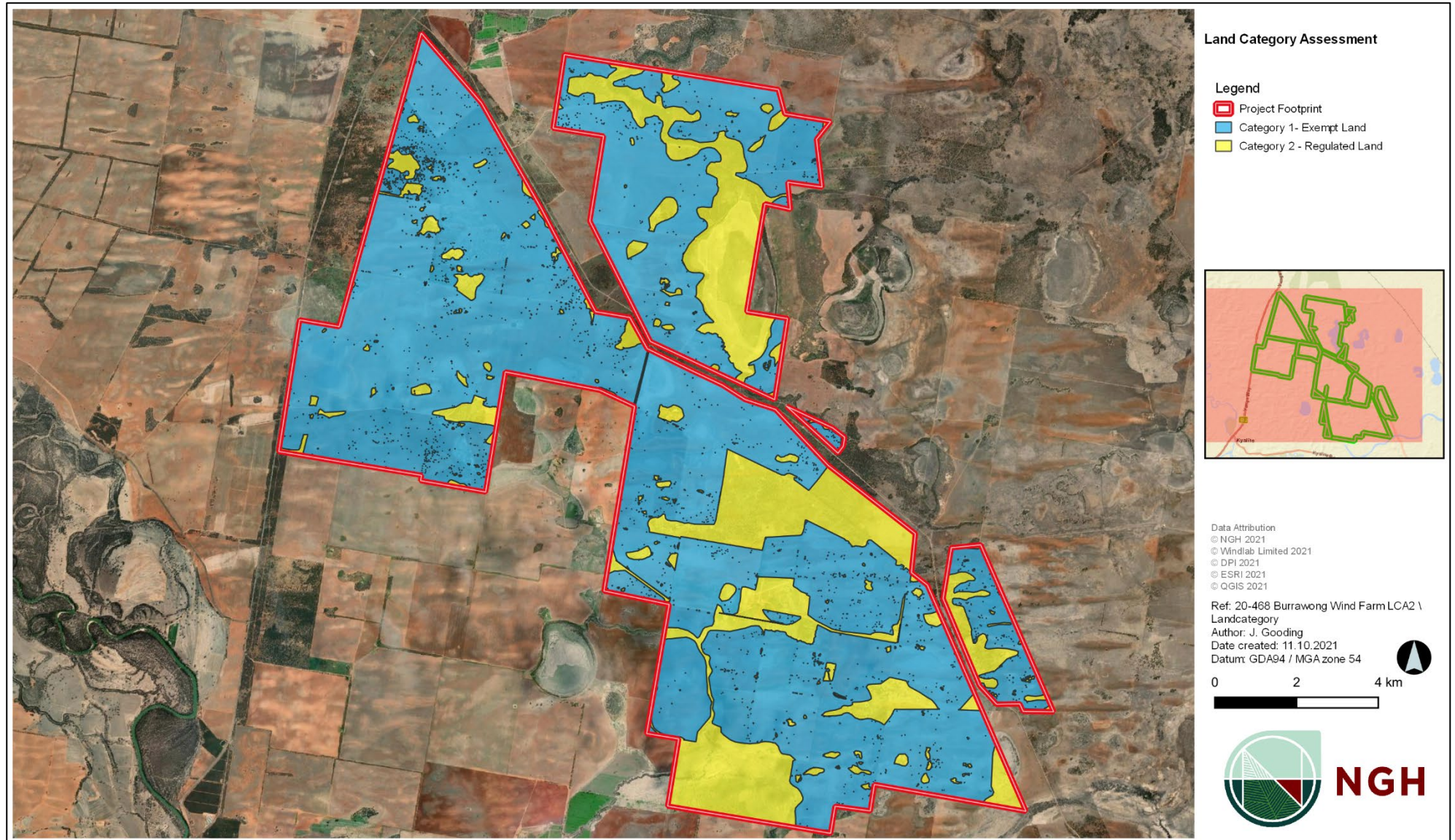


Figure 6-7 Preliminary land category mapping

The results of the preliminary biodiversity surveys, PCT mapping and preliminary Land Category Assessment indicate that the site is suitable from a biodiversity perspective.

### Threatened species

A search of the NSW Bionet Atlas revealed threatened fauna and flora are known to occur in the Study Area (10km radius from the Subject Land). Seven (7) threatened bird species occurred; of these, none occurred within the Subject Land.

The Protected Matters search found 7 plants, 2 mammals, 1 frog, 5 fish, 10 birds, 1 reptile and 10 migratory birds as potentially occurring in the Subject Land (see Table 6-5). The migratory species require consideration for turbine strike.

Most watercourses and waterbodies are ephemeral or overland flow paths on the Subject Land. One exception is the Forest Creek in the lower southeast portion of the Subject Land which is classified as key fish habitat (stream order 3) and has sections outside the Subject Area that are classified as areas of high biodiversity value. In addition, Condoulpe Lake, and Condoulpe Creek are also classified as areas of high biodiversity value located within the Subject Land (as seen in Figure 6-8). Further assessment of these areas will be required.

Due to the connectivity to Yanga National Park, Yanga Nature Reserve, and Yanga State Conservation Area a high number of threatened flora and fauna species have been recorded within close proximity to the Subject Land. Indirect impacts and collision impacts will require investigation.

Table 6-5 Protected Matters Threatened Species

Species	EPBC Act Status	Comments
<b>Aves</b>		
Australasian Bittern <i>Botaurus poiciloptilus</i>	Endangered	Also a BAM ecosystem credit species
Curlew Sandpiper <i>Calidris ferruginea</i>	Critically Endangered	
Grey Falcon <i>Falco hypoleucos</i>	Vulnerable	Also a BAM ecosystem credit species
Painted Honeyeater <i>Grantiella picta</i>	Vulnerable	
Malleefowl <i>Leipoa ocellata</i>	Vulnerable	
Eastern Curlew <i>Numenius madagascariensis</i>	Critically Endangered	
Plains Wanderer <i>Pedionomus torquatus</i>	Critically Endangered	
Night Parrot <i>Pezoporus occidentalis</i>	Endangered	
Regent Parrot (eastern) <i>Polytelis anthopeplus monarchoides</i>	Vulnerable	
Painted Snipe <i>Rostratula australis</i>	Endangered	A BAM Ecosystem Credit Species
<b>Fish</b>		

Species	EPBC Act Status	Comments
Silver Perch <i>Bidyanus bidyanus</i>	Critically Endangered	
Murray Hardhead <i>Craterocephalus fluviatilis</i>	Endangered	
Flathead Galaxia <i>Galaxias rostratus</i>	Critically Endangered	
Murray Cod <i>Maccullochella peelii</i>	Vulnerable	
Macquarie Perch <i>Macquaira australasica</i>	Endangered	No suitable habitat in subject area
<b>Frogs</b>		
Southern Bell Frog <i>Litoria raniformis</i>	Vulnerable	A BAM Species Credit Species
<b>Mammals</b>		
Corben's long-eared Bat <i>Nyctophilus corbeni</i>	Vulnerable	
Koala <i>Phascolarctos cinereus</i>	Vulnerable	
<b>Plants</b>		
<i>Austrostipa metatoris</i>	Vulnerable	A BAM Species Credit Species
Mossgiel Daisy <i>Brachyscome papillosa</i>	Vulnerable	A BAM Species Credit Species
Greencomb Orchid <i>Caladenia tensa</i>	Endangered	
Winged Peppergrass <i>Lepidium monoplacoides</i>	Endangered	A BAM Species Credit Species
Chariot Wheels <i>Maireana cheelii</i>	Vulnerable	
Menindee Nightshade <i>Solanum karsense</i>	Vulnerable	A BAM Species Credit Species
Slender Darling-pea <i>Swainsona murrayana</i>	Vulnerable	
<b>Reptiles</b>		
Striped Legless Lizard <i>Delma impar</i>	Vulnerable	
<b>Migratory Marine Species</b>		
Fork-tailed Swift <i>Apus pacificus</i>	Protected migratory bird	
<b>Migratory Terrestrial Species</b>		
Yellow Wagtail <i>Motacilla flava</i>	Protected migratory bird	
Satin Flycatcher <i>Myiagra cyanoleuca</i>	Protected migratory bird	

Species	EPBC Act Status	Comments
<b>Migratory Wetlands Species</b>		
Common Sandpiper <i>Actitis hypoleucos</i>	Protected migratory bird	
Sharp-tailed Sandpiper <i>Calidris acuminata</i>	Protected migratory bird	
Curlew Sandpiper <i>Calidris ferruginea</i>	Protected migratory bird	Listed above
Pectoral Sandpiper <i>Calidris melanotos</i>	Protected migratory bird	
Latham's Snipe <i>Gallinoga hardwickii</i>	Protected migratory bird	
Eastern Curlew <i>Numenius madagascarensis</i>	Protected migratory bird	Listed above
Common Greenshank <i>Tringa nebularia</i>	Protected migratory bird	

### Matters of National Environmental Significance (MNES)

The EPBC Protected Matters Search Tool within 10km of the Subject Land found the nearest RAMSAR wetland was located at the Hattah-kulkyne lakes 50-100km upstream. The Proposal would not alter hydrology of the locality or region or create contaminated run-off that may affect these wetlands.

The following Endangered communities were highlighted in the Protected Matters Search:

- *Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions* – This community does not occur onsite.
- *Grey box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia* - This community does not occur onsite.
- *Weeping Myall Woodlands* - This community is considered unlikely to occur but will be investigated further.

### Habitat values

Based on the preliminary field assessment, the key habitat values that occur in the Subject Land include but may not be limited to:

- Grassland/shrubland
- Woodland
- Fallen timber
- Isolated paddock trees
- Water sources:
  - Artificial water sources (dams/troughs/channels)
  - Wetland inundation areas
  - Ephemeral lakes and creeks
- Hollow bearing and nest trees
- Transmission line
- Agricultural crops

## **Biodiversity values**

Biodiversity values mapped by DPIE indicates land that is identified as containing high biodiversity value. Areas of high biodiversity value are particularly sensitive to clearing and development. There are no BAM Important Areas within the Subject Land, but Condoulpe Lake, Condoulpe Creek and The Forest Creek watercourses are mapped immediately adjacent to the Subject Land as having biodiversity value and therefore will be investigated further for indirect impacts given they are downstream of the Proposal.

## **Serious and Irreversible Impact (SAII)**

Entities identified as having a potential Serious and Irreversible Impact (SAII) that occur in the Subject Land according to the BAM-C include:

- *Calotis moorei* Burr-daisy
- *Dodonaea stenozyga* Desert Hopbush
- *Lasiopetalum behrii* Pink Velvet bush
- *Leptorhynchos waitzia* Button Immortelle
- *Pimelea serpyllifolia ssp. serpyllifolia* Thyme Rice-flower
- *Pseudomys desertor* Desert Mouse

Further surveys will determine the extent of impact on these entities if any.

## **Key Fish Habitat (KFH)**

Forest Creek runs through the south-east portion of the Subject Land and constitutes Key Fish Habitat (KFH) (being strahler stream order 3). Other smaller waterways are interspersed across the Subject Land mostly throughout the eastern portion (see Figure 6-8).

## **Riparian and terrestrial corridors**

The terrestrial landscape within the Subject Land contains discontinuous woodland corridors. Patches of woodland, shrubland and grasslands form important corridors and connectivity across the landscape and refuges for highly mobile species such as birds and bats. There are no riparian corridors in the project area.

Balranald Road intersects the Subject Land and forms an important vegetation corridor in the area that links various vegetation patches including Condoulpe Lake and Condoulpe Creek, and hence to the Murrumbidgee River. These systems form important fauna movement corridors on a regional scale, including important habitat for migratory wetland bird species. As such these areas will require further assessment. Waterways and indicative road crossings can be seen in Figure 6-8.

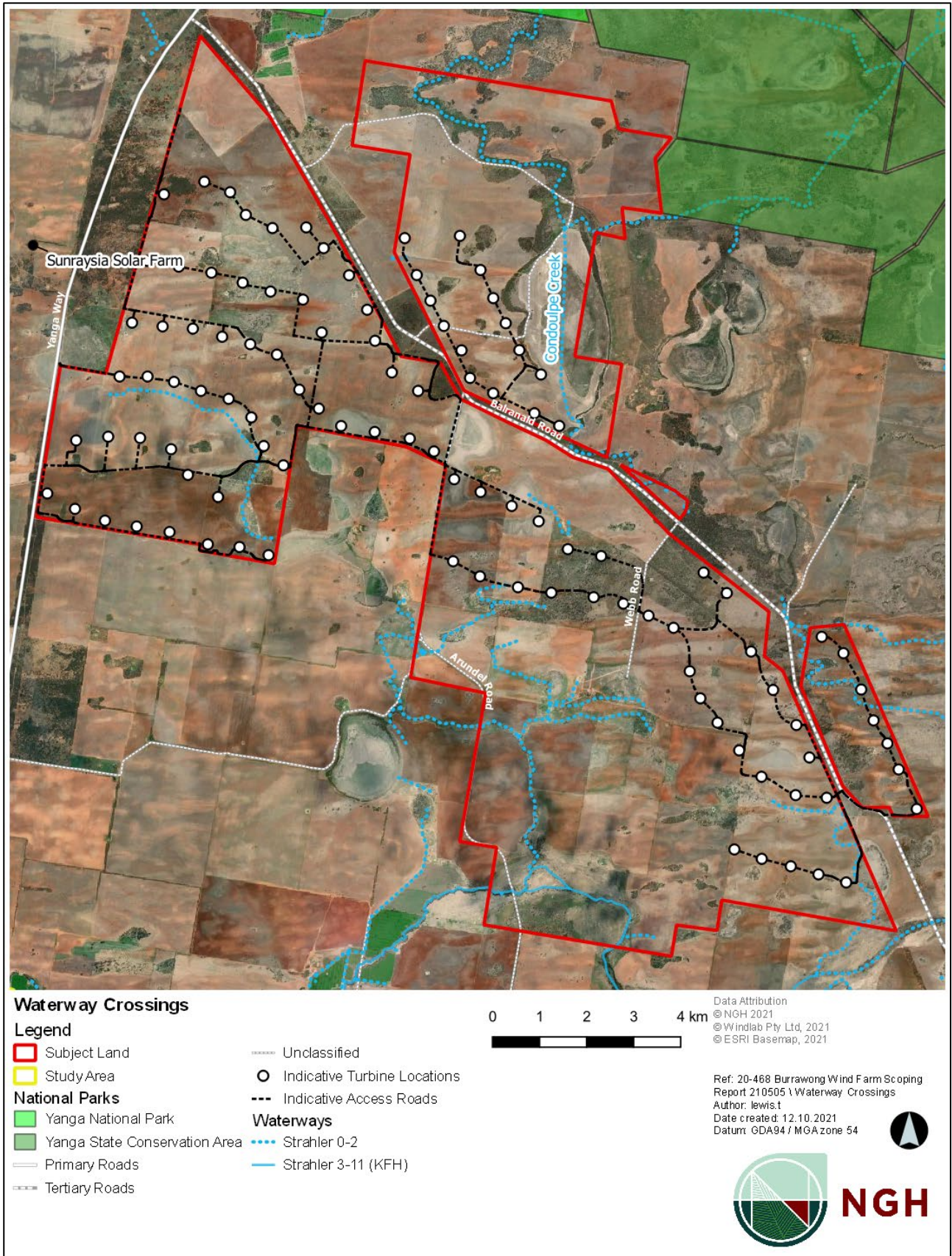


Figure 6-8 Waterways

## **Groundwater Dependent Ecosystems (GDEs)**

Aquatic and Terrestrial GDEs do not occur within the Subject Land.

## **Collision risks**

Understanding wind turbine collision risks are an important component of appropriately siting wind farms. Bird and bat activity levels are generally concentrated around areas of intact native overstorey vegetation or on migration / movement corridors. In this landscape, tree canopies are sparse and low. Movement patterns are often unpredictable, reflecting ephemeral resources such as lakes and flowering species. The northern border of the Subject Land is connected directly to Yanga State Conservation Area, and is near to Yanga Nature Reserve and Yanga National Park, anticipated to have higher local biodiversity. The risks of bird and bat strikes will be fully considered and assessed as part of the EIS via dedicated bird and bat utilisation surveys.

## **Further assessment requirements**

State Significant Developments (SSDs) require the preparation of a Biodiversity Development Assessment Report (BDAR), in accordance with Biodiversity Assessment Method (BAM) pursuant with the BC Act. The BDAR will demonstrate how impacts have been avoided and minimised wherever possible, and offset only as a last resort. As part of the BAM process, further work will include:

- Seeking endorsement of the preliminary Land Category Assessment from Biodiversity Conservation and Science (BCS).
- Completion of vegetation mapping and floristic plot data collection (to confirm the PCTs, TECs, their vegetation integrity score, condition and distribution)
- Targeted surveys for candidate threatened species (generated by the SEARs and BAM process)
- Iterative workshops with the Proponent to investigate options to avoid and minimise impacts
- Assessment of relevant direct, indirect, prescribed and serious and irreversible impacts
- Offset calculations to determine the offset obligation of the final Proposal
- Offset planning, to ensure the offset obligation can be met.

Most wind farms trigger referral under the EPBC Act. In this case, bird and bat collision risks will form a key aspect of the detailed assessment and are considered at this stage to have potential to generate a significant impact. On this basis, recognition of the need to address Commonwealth matters is sought in the SEARs. A referral will be lodged shortly with the DAWE. All relevant EPBC listed communities and species would be included in the survey program and reported within the BDAR.

### **6.2.4 Aboriginal heritage**

NGH Environmental PTY LTD was commissioned to undertake a preliminary Aboriginal heritage assessment for the Proposal, and the assessment is summarised below.



## **Methodology**

This assessment was informed by desktop investigation and research. The NSW Office of Environment and Heritage (OEH) maintains the Aboriginal Heritage Information Management System (AHIMS) database. A search of the AHIMS register for Aboriginal sites and places provides an indication of the presence of previously recorded Aboriginal sites, these include:

- Information about Aboriginal objects that have been reported by archaeologists, the Aboriginal community and members of the public
- Information about Aboriginal places which have been declared by the Minister for the Environment to have special significance with respect to Aboriginal culture
- Archaeological reports.

A search of the Aboriginal Heritage Information Management System (AHIMS) database on 21 October 2021 identified 16 Aboriginal sites within the search area, and no declared Aboriginal Places (see Appendix A). AHIMS sites are shown in Figure 6-9.

A search of available national heritage inventories (i.e. the Australian Heritage Database) was undertaken for suburbs within the Study Area including: Kyalite, Yanga, and Moolpa. One site was located within the broader Study Area: An Indigenous Place registered in Kyalite (10km south of the Subject Land).

## **Archaeological background**

Several archaeological surveys have been performed in the region including two within close proximity of the Subject Land (Keats & Markham, 2018), these studies were both conducted within similar landforms and provide reliable data to build a predictive model for the Subject Land.

Based upon the initial desktop assessment, using satellite imagery and topographic and environmental data, it appears that there is high potential for Aboriginal Cultural Heritage to occur within the Subject Land given it already has a significant number of registered AHIMS sites located within the area and the presence of archaeological sensitive landforms within the Subject Land.

## **Further assessment requirements**

Areas of moderate and high Aboriginal heritage constraints are likely to contain Potential Archaeological Deposits, which may require archaeological excavations if impacted by development.

An Aboriginal Cultural Heritage Assessment (ACHA) will be required across all areas of the Development Corridor to verify the potential of the site. The ACHA will be undertaken in accordance with the requirements of the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011) and the Code of Practice for the Archaeological Investigation of Aboriginal Object in NSW (DECCW 2010). Consultation with Aboriginal communities will be undertaken in accordance with the requirements of the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010). A pedestrian survey undertaken by a qualified archaeologist and Registered Aboriginal Parties (RAPs) will be required. All Aboriginal cultural heritage sites recorded during field surveys will be registered with AHIMS. Mitigation strategies will similarly be developed with input from RAPs.

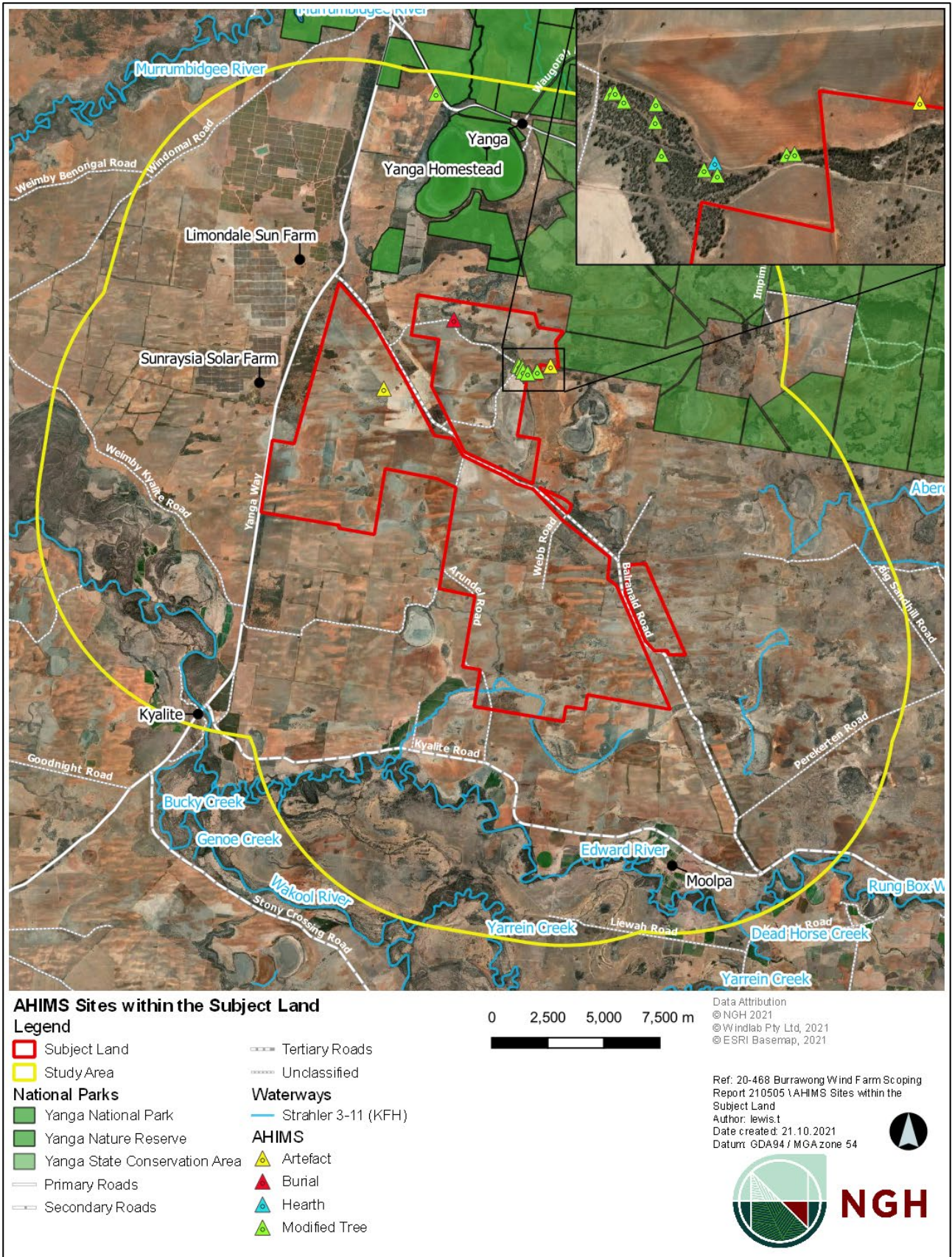


Figure 6-9 AHIMS Sites within the Subject Land

## **6.2.5 Traffic impacts**

The construction phase of the Proposal will require some local road upgrades and intersection treatments, to accommodate an increase in traffic volumes. This will include both heavy vehicles for the transport of wind turbine components, and light vehicles to transport construction workers and materials. Once construction is completed, minimal traffic will be associated with the operations of the Proposal, with generally only light vehicle movement of operations personnel.

Access to the Development Site during construction and operation is proposed via the existing local road network, and would primarily utilise Yanga Way, Balranald-Moulamein Road and Arundel Road.

The delivery of large components and construction traffic, would occur via one of four over size, over mass (OSOM) networks, which have been identified as potential transport routes:

- **South Australia - Port Adelaide**
  - Via Mildura (A20) ~550km
- **Victoria - Port of Geelong**
  - Via Bendigo (A79) ~450km
- **New South Wales – Port Kembla**
  - Via Wagga Wagga – Hume Hwy, Sturt Hwy (A20) ~820km
- **New South Wales – Port of Newcastle**
  - Via Wagga Wagga – Hume Hwy, Sturt Hwy (A20) ~1,000km

Initial investigations indicate that given the increased size of newer turbine components, the route from Port Kembla may not be suitable due to height restrictions. As such, a potential transport route from the Port of Newcastle will also be considered. All four ports have previously been used for the delivery of wind turbine components.

A preliminary transport route study will be undertaken to determine the most appropriate route to transport OSOM turbine components to site. The chosen route will then be investigated further in the full Traffic and Transport Impact Assessment (TTIA) as part of the EIS.

All four options for OSOM are major haulage routes that are used for heavy vehicle movements and there is expected to be minimal constraints along these routes. Some upgrades to these routes may be required to accommodate the length of the turbine blades proposed, these will be assessed as part of the Proposal.

Upgrades to local roads may also be required and appropriate traffic management measures, both temporary and permanent, may be required. Figure 6-10 indicates the main access roads to the site.

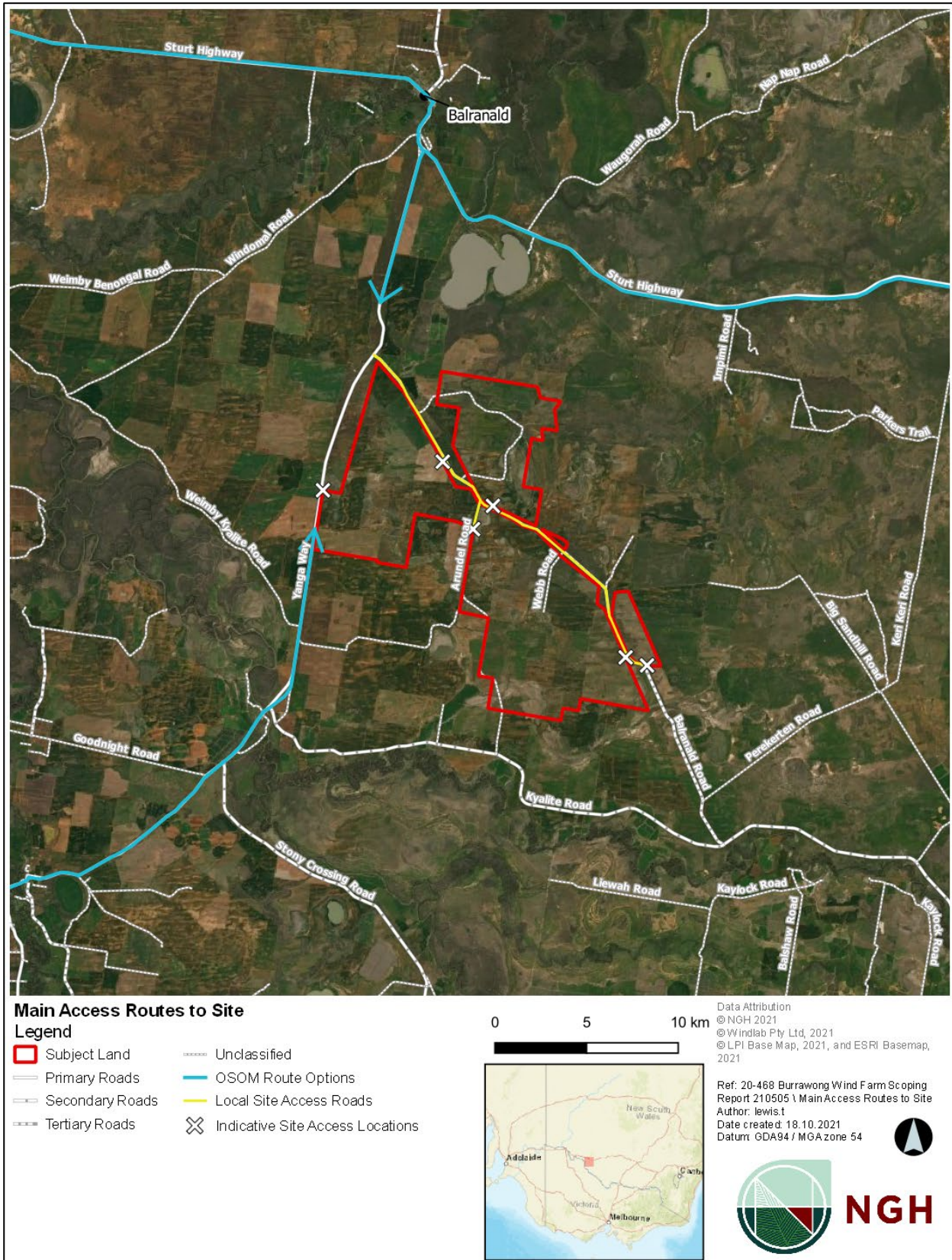


Figure 6-10 Main Access Routes to Site

## **Proposed further assessment**

A full Traffic and Transport Impact Assessment (TTIA) will be undertaken as part of the EIS to inform road upgrades and traffic management appropriate to the Proposal. The scope of the TTIA is likely to include, but is not limited to:

- Review of any previous traffic impact assessments conducted in the surrounding area of the project site
- Preparation of construction, operational and decommissioning traffic impact assessments.
- Detailed haulage routes for Oversize, Over Mass (OSOM) components delivered from ports to project site - including swept path analysis, traffic flows and required augmentations
- Consultation with relevant stakeholders including councils, government agencies and regulators
- Traffic volume assessment, for both light and heavy vehicles, in the surrounding area of the project site for the various phases of the project's lifetime
- Assessment of the existing road network's capacity to accommodate the type and volume of traffic produced by the project during construction, operation and decommission (including road upgrades and additions if necessary)
- Assessment of ongoing road maintenance and traffic control measures where necessary
- Schedule of potential impact identification and mitigation strategies where necessary

### **6.2.6 Aviation**

A number of airstrips and helipads are located within the Study Area, including two small private airstrips within the Subject Land, and five other airstrips within 10km of the Subject Land (see Figure 6-11).

The Balranald airport is a medium aerodrome with two runways, located 16km north of the Subject Land, or 1.9km northeast of Balranald on Ivanhoe Road.

Potential risks posed to aircraft from the proposed wind farm that require consideration include:

- Physical obstruction – this is most notable for aircraft that are closest to the ground such as those during take-off
- Interference with safe flight – the presence of excessively tall structures may present a hazard
- Reduction of areas available for pilots to use in the event of forced landing, such as engine failure after take-off
- Impact on use of emergency helicopter access
- Additional wind turbulence – the effect of wind turbine induced turbulence may affect aircraft that are smaller or lighter
- Electrical transmissions interfering with technical equipment – The electromagnetic field generated by the transmission line and wind farm may cause interference with technical equipment
- Impact on neighbouring farmers that use aerial spraying to manage their agricultural businesses
- Aerial baiting and culling in the National Park.

## **Proposed further assessment**

Potential impacts to aviation safety will be assessed in the EIS. The EIS will include a specialist consideration of aviation impacts to provide information on potential aviation risks and address any aviation concerns raised during consultation with key stakeholders. This would include mitigation strategies with the aim of maintaining aerial spraying, pest culling and baiting (in particular within Yanga National Park, Yanga Reserve, and Yanga State Conservation Area) and emergency helicopter landing facilities.

The studies undertaken in the EIS will also assess the potential aviation related impacts with reference to the applicable requirements included in the *Civil Aviation Regulation 1988 (CAR)*, *Civil Aviation Safety Regulations 1998 (CASR)*, *National Airports Safeguarding Framework Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation* (DITRDC, 2019), and associated Manuals of Standards. This would include an assessment of the impacts on aerial agricultural applications, aerial firefighting and aerial emergency services.

Consultation with the Civil Aviation Safety Authority (CASA) would be undertaken in relation to aviation safety lighting requirements, notification and reporting requirements, marking of turbines, marking of wind monitoring towers and marking of overhead transmission lines and poles to maintain an acceptable level of aviation safety. Not all wind farms require aviation safety lighting and this requirement would be assessed in detail as part of the EIS.

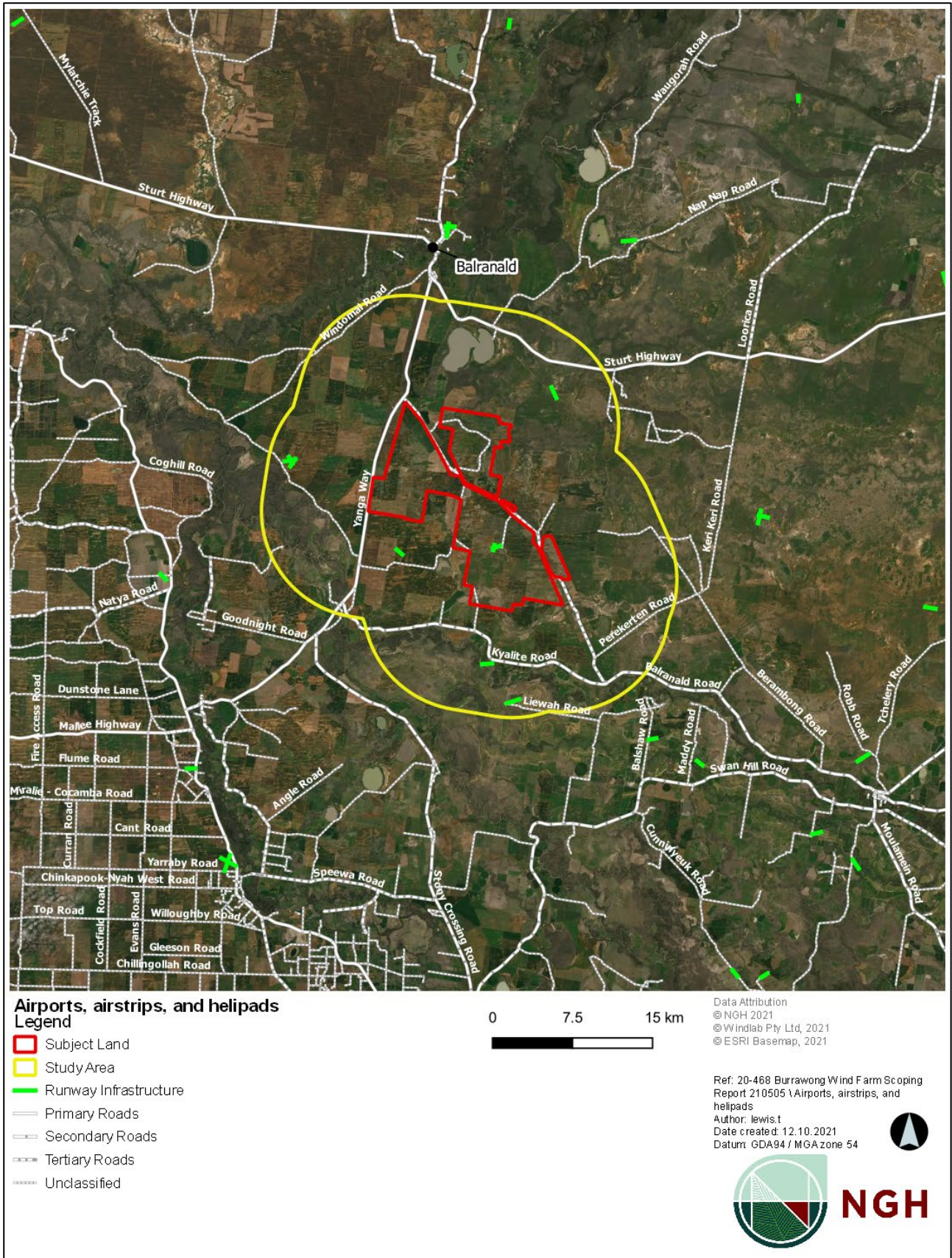


Figure 6-11 Airports, airstrips, and helipads

### **6.2.7 Telecommunications**

Telecommunication services such as television and radio broadcast services, mobile phone services, radio communication services and aircraft navigation services are relied upon in the town of Balranald as well as residences within the Study Area. The operational wind farm has the potential to cause interference with electromagnetic signals.

A search of the Australian Communication and Media Authority (ACMA) database was carried out on the 12 May 2021 and identified 59 registered sites associated with licences and point to point links within 25km of the Subject Land. These included sites held by Telstra Corporation Limited, State Emergency Service, NSW Police and others. The closest site is located within 1km of the eastern border of the Subject Land (Figure 6-12).

### **Proposed further assessment**

The EIS will include a specialist assessment considering telecommunication impacts with reference to required legislation and guidelines including the *Australian Radio and Communications Act 1992*, *NSW Wind Energy Guideline for State Significant Wind Development* (DP&E, 2016) and the *Clean Energy Council Best Practice Guidelines* (Auswind, 2006).

The assessment will identify ACMA registrations associated with licences and point to point links that have the potential to be adversely affected by the proposed wind farm.

Mitigation measures to minimise potential impacts on telecommunications would be prepared as part of the EIS.

### **6.2.8 Social impacts**

#### **Social locality**

The social locality for the Proposal has been defined as:

- the landholdings, property owners and residents within the Subject Land;
- the State Suburbs (SSC) of Balranald, Yanga, Kyalite and Moolpa, as per the Australian Bureau of Statistics' (ABS) statistical area; and
- the Murray River LGA, which hosts the Proposal and the neighbouring Balranald LGA.

A map of the social locality and social baseline for this area is provided in Appendix D.

#### **Preliminary assessment**

An initial evaluation of likely social impacts was undertaken in accordance with the Social Impact Assessment Guideline and supporting Technical Supplement (DPIE 2021). The evaluation is provided in Appendix D. Social impacts will be explored further and confirmed during the EIS but based on the initial evaluation, the following have been identified as areas with potential for high social impacts.

- Negative:
  - Demand on housing and services, in construction
  - Changes to visual amenity, in operations



- Positive:
  - Local economic stimulus, in construction.
  - Diversification of land use, in operations

### **Proposed further assessment**

The EIS will provide thorough consideration of the potential social and economic impacts. Community consultation will be undertaken during the EIS phase to understand any community concerns and ensure the EIS addresses these concerns.

A Social Impact Assessment will be undertaken in accordance with the Social Impact Assessment Guideline for State Significant Projects (DPIE, 2021).

This will include investigating strategies to promote local involvement and employment opportunities. Other mitigation and enhancement methods that are being considered are included in Appendix D.

### **6.2.9 Cumulative impacts**

A number of renewable energy projects are at different stages of approval within 100km of the Proposal. Three major solar farms are located within the neighbouring Balranald and Hay LGAs. Limondale Solar Farm is operating; Sunraysia Solar Farm has been constructed and is being commissioned; and Hay Solar Farm has received development approval.

Limondale and Sunraysia Solar Farms are both located off Yanga Way, directly opposite the location of the Proposal.

Given that the Proposal is located within the proposed South-West REZ and along the proposed EnergyConnect line route, there is expected to be other renewable energy projects within the region.

### **Preliminary assessment**

Consideration of cumulative impacts is provided in the Scoping Summary Table (Appendix E) and Social Impact Assessment Worksheet (Appendix D).

During construction and operation, key cumulative impacts may include:

- Visibility of the Proposal may generate a cumulative impact with transmission lines, adjacent Solar Farms and any other proposed renewable energy proposal within the region.
- Noise and traffic during construction may generate a cumulative impact if construction activities occur concurrently
- Pressure on local facilities, goods and services during construction may generate a cumulative impact if construction activities occur concurrently

### **Proposed further assessment**

The EIS will provide thorough consideration of cumulative impacts. Community consultation will be undertaken during the EIS phase to understand any community concerns and ensure the EIS addresses these concerns.

A Cumulative Impact Assessment will be undertaken in accordance with the Cumulative Impact Assessment Guidelines for State Significant Projects (DPIE, 2021).

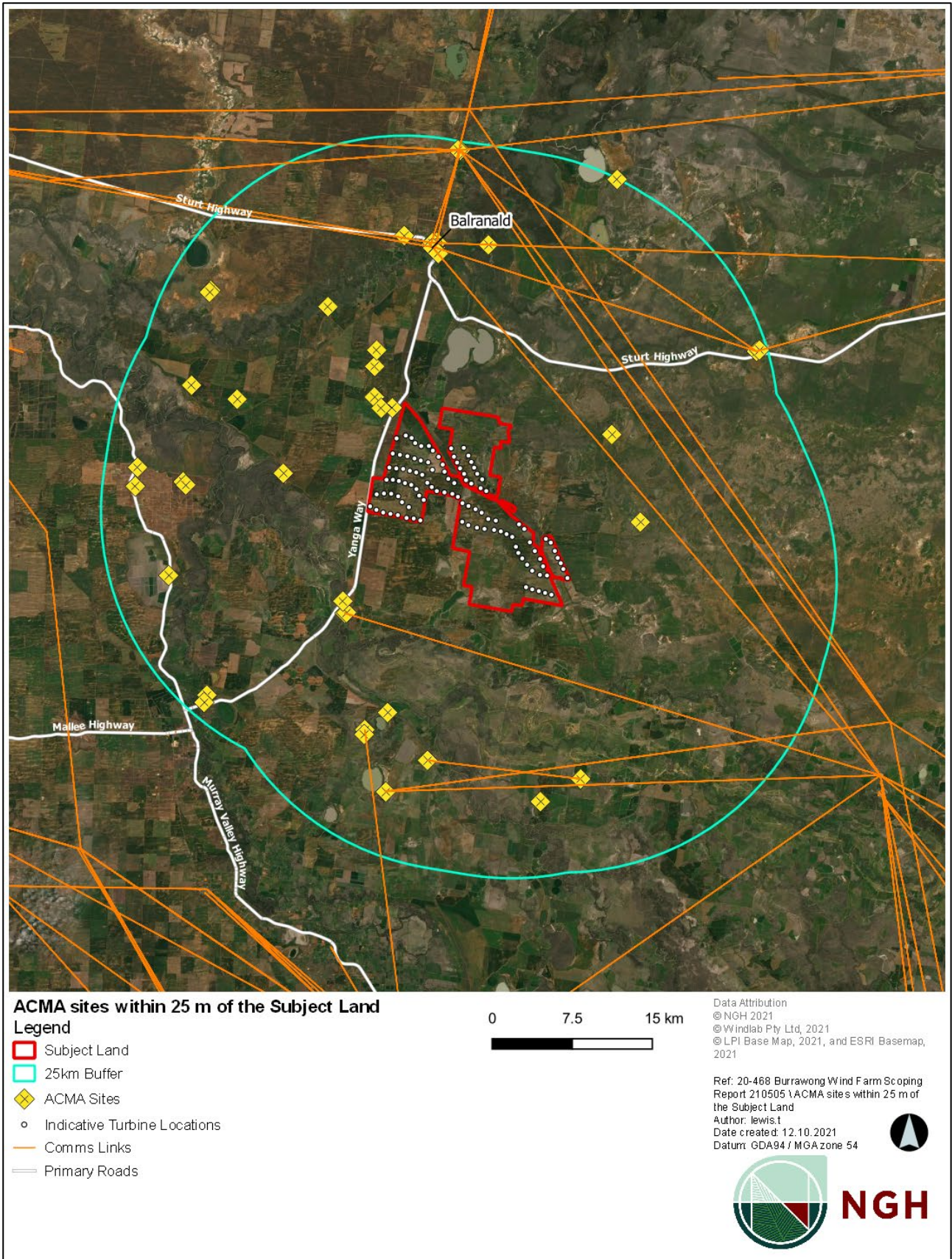


Figure 6-12 ACMA sites within 25 m of the Subject Land

### **6.3 Other environmental issues**

There is a range of additional potential environmental issues associated with the Proposal which are considered secondary issues for investigation, given the characteristics of the Proposal and the availability of appropriate safeguards for mitigation. These issues are outlined in the following sections.

These issues will be addressed by desktop assessment, unless indicated otherwise in the SEARs. It is anticipated that any impacts identified will be able to be managed through appropriate mitigation measures and management plans.

Table 6-6 Other environmental issues

Issue	Existing environment	Potential impacts	Investigation strategies
<p><b>Soil and contamination</b></p>	<p>As indicated from the background searches (Appendix A):</p> <ul style="list-style-type: none"> <li>The geology of the Subject Land is predominantly Quaternary Woorinen Formation, which includes poorly consolidated red-brown sand dunes usually east-west oriented (NSW Geology Plus, 2021). Quaternary lacustrine deposits, Cainozoic sand dunes and poorly consolidated clay, silt, sand and gravel of the Cainozoic Shepparton Formation are present in pockets within the Subject Land.</li> <li>Majority of the Subject Land is located on the Condoulpe Land System. Soils are predominantly solonized brown soils and areas of red earths on plains and flats, dunes of deep brownish sands and drainage basins of grey cracking clays (Walker, 1991).</li> <li>Erosion is considered to be minor to moderate windsheeting and scalding (Walker, 1991).</li> <li>The ASRIS Acid Sulphate Soils (ASS) Reference Sites and National Atlas (Appendix A) mapping within the locality is predominately 'Extremely Low Probability'. The Subject Land is unlikely to contain</li> </ul>	<p>Impacts during construction would include:</p> <ul style="list-style-type: none"> <li>Discrete areas of ground disturbance and vegetation removal, which have the potential to cause soil erosion, sedimentation and weed ingress.</li> <li>Wind farm construction is a linear development involving long thin trenches, roads, and spot development, which reduces soil impact areas considerably.</li> </ul> <p>Soil constraints are considered manageable and factors that will be considered in the EIS include:</p> <ul style="list-style-type: none"> <li>Means to control erosion during construction/ operation.</li> <li>Access in wet conditions.</li> </ul>	<p>The EIS will provide thorough consideration of soil impacts and propose mitigation measures for construction and operation.</p> <p>Due to the flat nature of the landscape, the proposed linear infrastructure and ability to manage soils during construction and operation, no specialist investigation is proposed, although the utility of base line soil survey, to validate existing mapping and inform remediation post disturbance will be considered.</p>

Issue	Existing environment	Potential impacts	Investigation strategies
	<p>ASS.</p> <ul style="list-style-type: none"> <li>Based on EPI data mapping, no salinity issues occur on site.</li> <li>Agricultural areas can have buried rubbish including contaminants such as herbicides that may be encountered during excavation. However, the Development Site does not appear on the List of NSW contaminated sites notified to the EPA.</li> </ul>		
<p><b>Land use compatibility</b></p>	<p>The key land use within the study area is agriculture. The soils are not highly productive and have limitations for cultivation. Land and soil capability (LSC) mapping for the Subject Land indicates that:</p> <ul style="list-style-type: none"> <li>The majority of the Subject Land is Class 6 under the LSC assessment scheme. Class 6 land is considered to have severe to very severe limitations, suitable only for grazing and not suitable for cultivation (OEH, 2012).</li> <li>There are small areas of Class 4 land. Class 4 land is considered to have moderate to severe limitations for some land uses. Suitable for grazing with limitations for cultivation (OEH, 2012).</li> </ul> <p>See Figure 2-5 for land use zoning of the Subject Land and wider Study Area.</p> <p>In the wider Study Area, there is also some land zoned as E1 - National Parks and Nature</p>	<p>During construction, there would be a reduction in agricultural activities within the Development Site.</p> <p>The final footprint of the development would disturb approximately 300 ha of land, within the broader Study Area of approximately 15,500 ha. This equates to a 2% impact area, leaving the remaining 98% of land for agriculture.</p> <p>During operations, current agricultural activities such as cropping and grazing could continue without substantive impacts on yield and with the additional income stream provided to the landowners, diversifying the land use and income streams. This is particularly relevant in a context of projected drought and climate change.</p> <p>No part of the Subject Land is within the National Parks zone, however, indirect impacts on the values protected in the park could result.</p>	<p>The impact on agricultural production in the locality and region would be assessed in the EIS as part of a Land Use Conflict Risk Assessment (LUCRA).</p> <p>An Agricultural Impact Assessment would investigate the impact of the loss of agricultural land on agriculture in the region. As above, this may be informed by base line soil surveys to verify mapping for the site.</p> <p>The Biodiversity Assessment would include a landscape scale assessment and consideration of impacts to fauna movement corridors and collision risk, in consultation with NPWS stakeholders.</p> <p>A Bird and Bat Risk assessment would be completed and consideration of the NPWS Development Adjacent to National Parks and Service Lands (2020), would be considered in consultation with NPWS.</p>

Issue	Existing environment	Potential impacts	Investigation strategies
	Reserves Area.		
<b>Hydrology and groundwater</b>	<p>The Subject Land is located on the Lowbidgee Floodplain.</p> <p>Surface water features within the Subject Land include:</p> <ul style="list-style-type: none"> <li>• Condoulpe Creek</li> <li>• Forest Creek</li> <li>• Undefined ephemeral watercourses</li> <li>• Condoulpe Lake</li> </ul> <p>Although flood events and wetland inundation are likely to be seasonal, these aspects should be considered during the planning phase.</p> <p>Farm dams occur within the Subject Land.</p>	<p>Contamination of groundwater and surface water is unlikely given that chemicals and fuels will be appropriately stored, and spills procedures will be implemented.</p> <p>Impacts are best considered as part of the design process to ensure they are manageable. The EIS will include consideration of placement of infrastructure to minimise waterway crossings; protect hydrological function of waterways; and protect against soil erosion.</p>	<p>The EIS will consider the need for further hydrology investigations and provide thorough consideration of hydrology and groundwater impacts. Where required, specialist input from a hydrologist will be sought for works that may affect local hydrology.</p>
<b>Historic heritage</b>	<p>A search of available national heritage inventories (Appendix A) was undertaken for suburbs within the Study Area including Kyalite, Yanga, and Moolpa. No results were found within the Subject Land.</p> <p>A search of available state and local heritage inventories was undertaken via the State Heritage Register within the Study Area including Kyalite, Yanga, and Moolpa. These searches did not indicate any items of local or NSW heritage significance within the Subject Land.</p> <p>The Yanga Homestead is the closest historic site, located approximately 7.5km north-east</p>	<p>The Subject Land has been identified as having low potential for historic heritage constraints. Despite the Subject Land being directly south of the historic Yanga Homestead, there are no records to indicate any constraints.</p> <p>The historical archaeological potential of the Subject Land lies largely in the potential for undocumented structural remains, or personal belongings and artefactual evidence reflecting daily life and activities. Despite this, it is considered a low potential for significant historic archaeological deposits to be present across the Subject Land.</p>	<p>A historic heritage assessment, including onsite inspection, will be required to determine the heritage value of the Subject Land, including the location of unlisted sites.</p>

Issue	Existing environment	Potential impacts	Investigation strategies
	<p>at its closest point to the Subject Land. The Homestead is located on the shores of Lake Yanga, looking south-west towards the Subject Land. The Yanga Homestead has been the subject of several historic studies but is not heritage listed. Whilst there are no legal restrictions on the site, there is an obligation to consider and preserve the historic values of the site.</p>		
<p><b>Air Quality and climate</b></p>	<p>The air quality in Balranald is generally expected to be good and typical of that found in a rural setting in NSW due to low population numbers. Existing sources of air pollution in such a location is expected to comprise dust from agricultural practices. During colder months, there may be a minimal increase in air contaminants due to smoke emissions from the operation of solid fuel heating.</p> <p>The Australian Bureau of Meteorology (BOM) (1995-2020) climate records from the nearest climate station at Balranald RSL (station number 49002) indicates a mean summer maximum of 33.1°C (January) and a mean winter minimum of 3.5°C (July). Rainfall records from the same station show a mean annual rainfall of 323.1mm, and that rainfall is generally greatest over spring, with the average monthly maximum occurring in May (31.1mm).</p>	<p>Operation of the proposal will have a positive contribution in mitigating greenhouse gas emissions.</p> <p>Construction of the proposal is not anticipated to have a significant impact on air quality and will mostly be related to dust during construction. Impacts to air quality during operation are likely to be negligible.</p>	<p>The EIS will provide thorough consideration of air quality impacts and propose mitigation measures for construction and operation.</p>

<b>Issue</b>	<b>Existing environment</b>	<b>Potential impacts</b>	<b>Investigation strategies</b>
<b>Electromagnetic Fields (EMFs) and Health</b>	EMFs are associated with transmission lines and substations in the area.	Additional EMFs would be generated from the proposed transmission lines, and the substation(s), during the operation of the Proposal.	An EMF assessment which considers the potential health issues and risks associated with EMF produced by the wind farm and associated electrical infrastructure will be undertaken during the EIS.
<b>Bushfire</b>	Bushfire Prone Land – Category 2 occurs directly to the west of the Subject Land, and Category 3 occurs 3.5km south. These are considered the second and third highest risk for bush fire.	Wind farms generally pose a low risk of starting bushfires, and the Proposal would employ proven and mature technology for wind turbine generators and associated ancillary electrical infrastructure. Access to the site and surrounding areas will be improved, reducing response times to local fires.	The EIS will provide thorough consideration of bushfire risk and propose mitigation measures. Development of defensible set back buffers, access and other protection measures in consultation with the Rural Fire Service will be investigated to ensure bush fire safety.
<b>Blade Throw</b>	Not currently relevant.	Blade throw is considered low risk during the operation phase, as the Proposal would employ proven and mature wind turbine technology. However, the risks from blade throw include damage to infrastructure and injury.	The EIS will provide thorough consideration of blade throw impacts.
<b>Battery Storage</b>	Not currently relevant.	Batteries pose a potential fire or contamination risk to the Development Site and surrounds.	An assessment of hazard and risk would be assessed in the EIS as per SEPP 33 – Hazardous and Offensive Development. A Preliminary Hazards Assessment will be undertaken as part of the EIS.
<b>Waste management</b>	Not currently relevant.	The Proposal would utilise a variety of materials during the construction phase, and generate several waste streams including excavated material.	The EIS will provide thorough consideration of waste management impacts and proposed mitigation measures during construction and operation.



Issue	Existing environment	Potential impacts	Investigation strategies
		<p>Limited operational waste will be associated with the Proposal.</p> <p>Waste management constraints are considered manageable.</p>	

## **7. Response to key issues and constraints**

This section provides a summary of the key constraint areas identified through the preliminary assessment and consultation that has occurred to date. It outlines how Windlab is responding to these as the development of the Proposal progresses.

Based on the information provided in Sections 4 and 6, and commensurate with potential risk, the key issues for investigation are summarised in Table 7-1 and Figure 7-1 (where mappable) and include:

- Visual Amenity
- Noise Amenity
- Biodiversity
- Aboriginal Heritage

These areas have sensitive features that require detailed assessment in accordance with the SSD Guidelines (DPIE, 2021). The further investigation of these issues will shape the development of the Burrawong Wind Farm and ensure that the detailed Proposal presented in the EIS is responsive to its environmental and social context. They may require avoidance or other detailed mitigation strategies to be considered.

A precautionary approach is adopted at this early stage, and where uncertainty or information gaps exist, a higher constraints rating has been applied. These areas will be prioritised for further specialist investigation in the EIS, which may reduce the area of constraint.

Other areas that are considered low and moderate constraint are not presented in this section. These areas may require specific management protocols and will be investigated commensurate with risk in the EIS, as outlined in Section 6.

Table 7-1 includes how Windlab will respond to each issue moving forward. Further detail regarding how the preliminary layout and proposed project design has responded to these constraints is detailed in Section 2.4.

Table 7-1 Response to preliminary ‘high constraint’ areas

Key Issue	Features	Windlab’s Response
<p><b>Visual Amenity</b></p>	<p>Based on preliminary site investigations, three close residential receivers have potential for high visual impacts (see Figure 7-1).</p> <p>The visibility of the Proposal is likely to extend beyond the generally defined Study Area in the Visual Bulletin of 8km due to the flat terrain and scale of the proposed wind turbines.</p>	<p>As part of the site selection process, Windlab selected a Development Site that minimises the number of close residential receivers. While there are a low number of close residential receivers for a wind farm of this scale, it is acknowledged that the Proposal has the potential for high visual impacts on those close residential receivers identified in Table 6-1 and Figure 7-1.</p> <p>In response to the preliminary site investigations and feedback from DPIE at the Scoping Meeting, the Study Area has been extended beyond 8km (DPIE, Wind Energy: Visual Assessment Bulletin, 2016) to include detailed assessment from key viewpoints and townships (in particular the townships of Kyalite and Balranald, Yanga National Park, dwellings along the Edward River and dwellings within the National Park Estate). This will ensure more receivers are captured in the assessment and consideration of mitigation strategies.</p> <p>As part of the EIS, Windlab will:</p> <ul style="list-style-type: none"> <li>• Complete a detailed visual impact assessment</li> <li>• Prioritise consultation with affected stakeholders</li> <li>• Revise infrastructure layout to minimise impacts</li> <li>• Develop mitigation strategies for residual impacts with input from affected residents and specialists, with a priority on negotiated agreements.</li> </ul>

Key Issue	Features	Windlab's Response
<p><b>Noise Amenity</b></p>	<p>Based on preliminary site investigations, two close residential receivers have potential for high noise impacts.</p>	<p>As above, as part of the site selection process, Windlab selected a Development Site that minimises the number of close residential receivers. While there are a low number of close residential receivers for a wind farm of this scale, it is acknowledged that the Proposal has the potential for high noise impacts on those close residential receivers identified in Table 6-2.</p> <p>As part of the EIS, Windlab will:</p> <ul style="list-style-type: none"> <li>• Complete a detailed noise impact assessment</li> <li>• Prioritise consultation with affected stakeholders</li> <li>• Revise infrastructure layout to minimise impacts</li> <li>• Develop mitigation strategies for residual impacts with input from affected residents and specialists, with a priority on negotiated agreements.</li> </ul>
<p><b>Biodiversity</b></p>	<p>Based on our preliminary site investigations, high value features include:</p> <ul style="list-style-type: none"> <li>• TEC with an intact overstorey and/or native dominated understorey.</li> <li>• Non-TEC Plant Community Types (PCTs) in good condition</li> <li>• Areas containing a high abundance of hollow bearing trees in a landscape generally devoid of or that has a sparse abundance of canopy species.</li> <li>• High potential candidate species credits habitat (i.e., Hollow dependent species).</li> <li>• Riparian areas and marshlands in moderate to good condition and mapped as vulnerable land on the Native Regulatory Map.</li> </ul>	<p>In response to the preliminary site investigations, Windlab has developed a preliminary layout for the Proposal that avoids most native vegetation.</p> <p>As part of the EIS, Windlab will:</p> <ul style="list-style-type: none"> <li>• Carry out detailed flora and fauna surveys, including 'utilisation surveys' to understand fauna movements and potential collision risks.</li> <li>• Complete a Biodiversity Assessment Report (BDAR) in consultation with Biodiversity, Conservation and Science (BCS) and National Parks and Wildlife Services (NPWS).</li> <li>• Complete a collision risk assessment, specific to birds and bats and outline a monitoring strategy appropriate to the proposal.</li> <li>• Concurrently, revise infrastructure layout to avoid and minimise impacts, concentrate development in areas of non native or degraded native vegetation.</li> <li>• Calculate and commit to meeting the offset obligation for the proposal, as required under the BC Act.</li> <li>• Develop specific additional mitigation strategies for residual impacts with input from specialists.</li> </ul>

Key Issue	Features	Windlab's Response
<p><b>Aboriginal Heritage</b></p>	<p>Based on our preliminary investigations, areas of high significance or potential significance include:</p> <ul style="list-style-type: none"> <li>• Registered AHIMS sites and archaeological sensitive landforms (such as waterways).</li> <li>• Thirteen sites for avoidance include burials, modified trees and hearths.</li> <li>• Elevated areas, areas of known site clusters, paleochannels and lunette features, red sandy rises and areas on the margins of wetlands and drainage depressions.</li> </ul>	<p>In response to the preliminary site investigations, Windlab has developed a preliminary layout for the Proposal that avoids all previously registered AHIMS sites.</p> <p>As part of the EIS, Windlab will:</p> <ul style="list-style-type: none"> <li>• Complete an Aboriginal Cultural Heritage Assessment (ACHA), including prescribed consultation with Registered Aboriginal Parties (RAPs)</li> <li>• Concurrently, revise infrastructure layout in response to findings (which may include additional areas).</li> <li>• Develop mitigation strategies in consultation with RAPs which could range from avoidance to salvage programs to more intensive survey including test pits.</li> </ul>

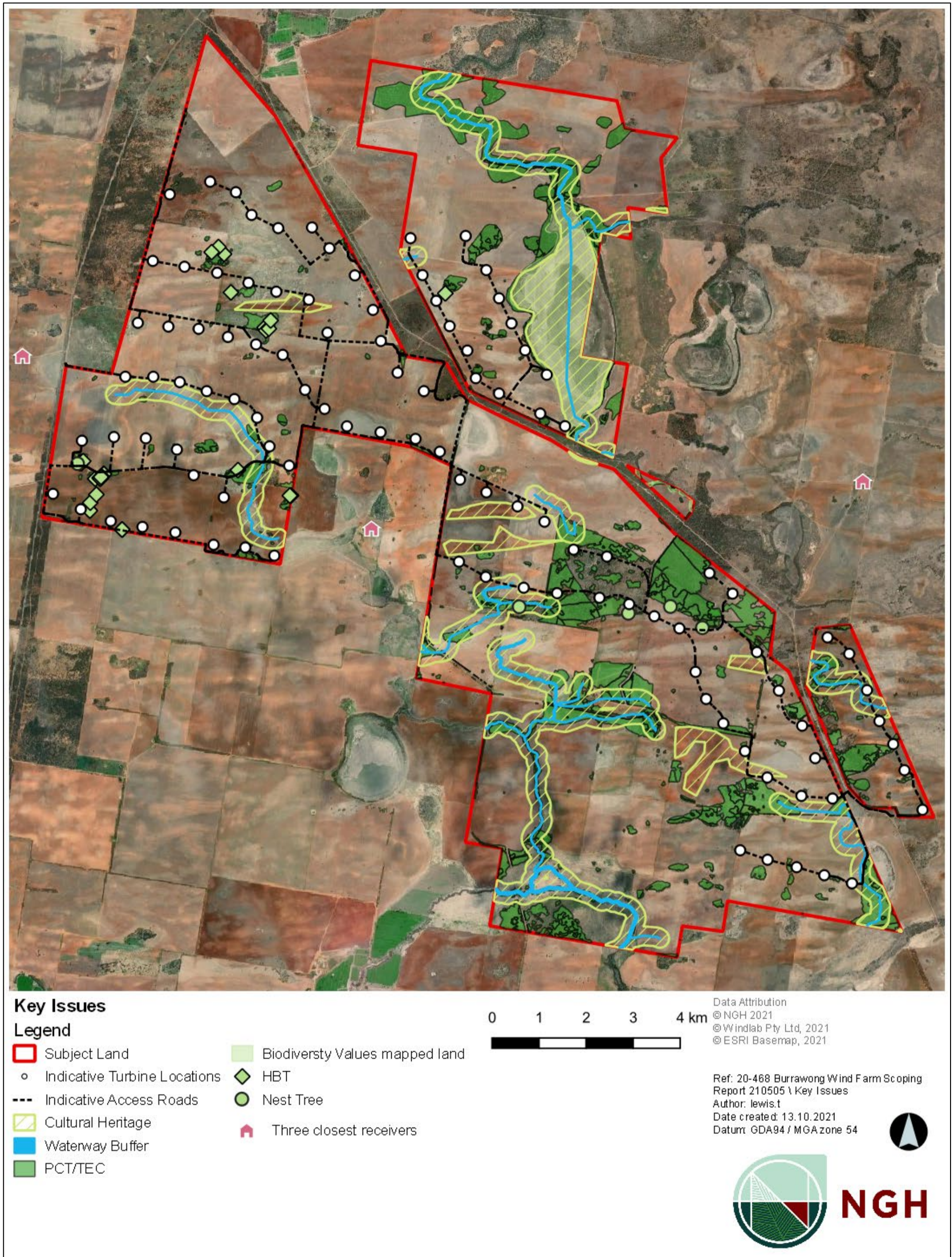


Figure 7-1 Key issues map